The OPNAV Perspective on Science, Technology, and Engineering: Opportunities and Obligations

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Distribution A – Public Release

What Science and Technology Means to OPNAV: An Opportunity

Game Changing Technology

- **Railgun, LDUUV, Directed Energy**

Continuous Improvement For Current Product Lines

- FNCs, ManTech, TIPS
- prototypes and technology improvements
- informed options for acquisition: even "failed transitions" represent progress

A Reserve Capacity to "Surge" S&T in Response to Emergent Threats and Opportunities

- Speed to Fleet, Swamp Works, Tech Solutions

A Hedge Against An Uncertain Future

- A Broad Based Portfolio of Basic Science

Affordable Asymmetric Advantages

Not an oxymoron

EM Railgun

- **Multi-use weapon at $25K per round …**

LDUUV

- **ISR at a fraction of the cost of an SSN**

Solid State Laser

- **Less than $1 per "shot"**

The Opportunity

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Future Naval Capabilities Pillars

Sea Shield - Missile defense, ASW, MCM and fleet/force protection technologies

Sea Strike - Weapons, aircraft, and expeditionary warfare technologies

Sea Basing - Logistics, shipping, and at-sea transfer technologies

FORCEnet - C4ISR, networking, navigation, decision support and space technologies

Naval Expeditionary Maneuver Warfare - Enhance the warfighting capabilities of naval ground forces with special emphasis on regular and irregular warfare

Capable Manpower - Match Sailors and Marines to the right jobs, design intuitive systems, and train for mission essential competencies

Force Health Protection - Protect Sailors and Marines by reducing morbidity and mortality when casualties occur

Enterprise and Platform Enablers - Cross-cutting technologies to lower acquisition, operations, and maintenance costs

Power & Energy - Energy security, efficient power and energy systems, high energy and pulse power

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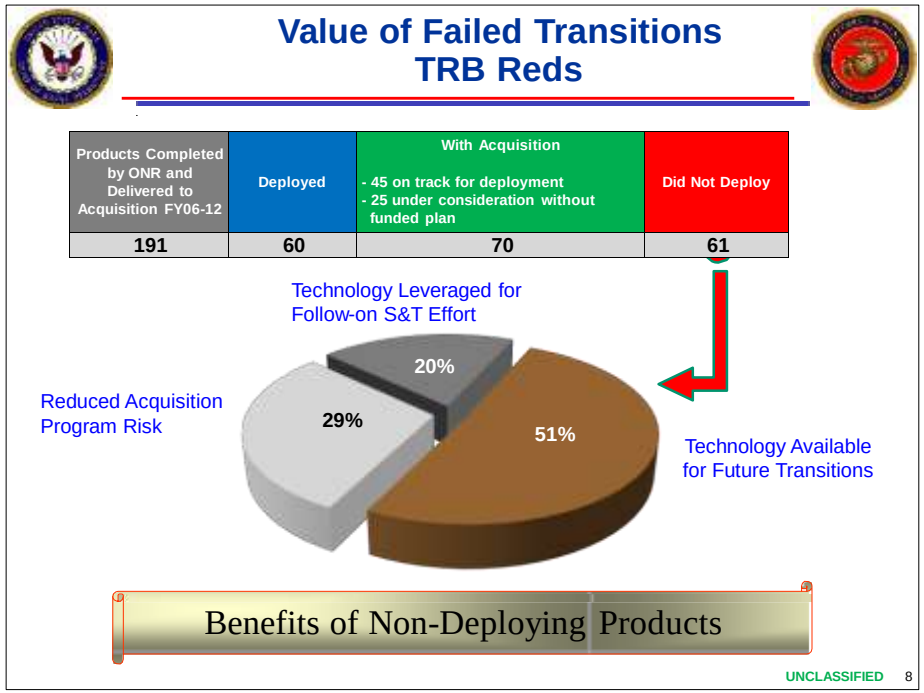

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Quick Reaction S&T

Off-the-shelf technology projects with a 12 to 24 month time horizon

- ***SwampWorks***:
  - Newly invented/discovered technologies
  - Accelerated timeframe.
- ***TechSolutions***:
  - Operational problems ID'd by Sailors and Marines
- ***Speed to Fleet (S2F)***:
  - high priority, near-term needs of warfighters
  - CNO funded, ONR/N84 managed

The Persistent Littoral Undersea Surveillance (PLUS) system was accelerated to operational use via S2F

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- Emergent Threats and Opportunities
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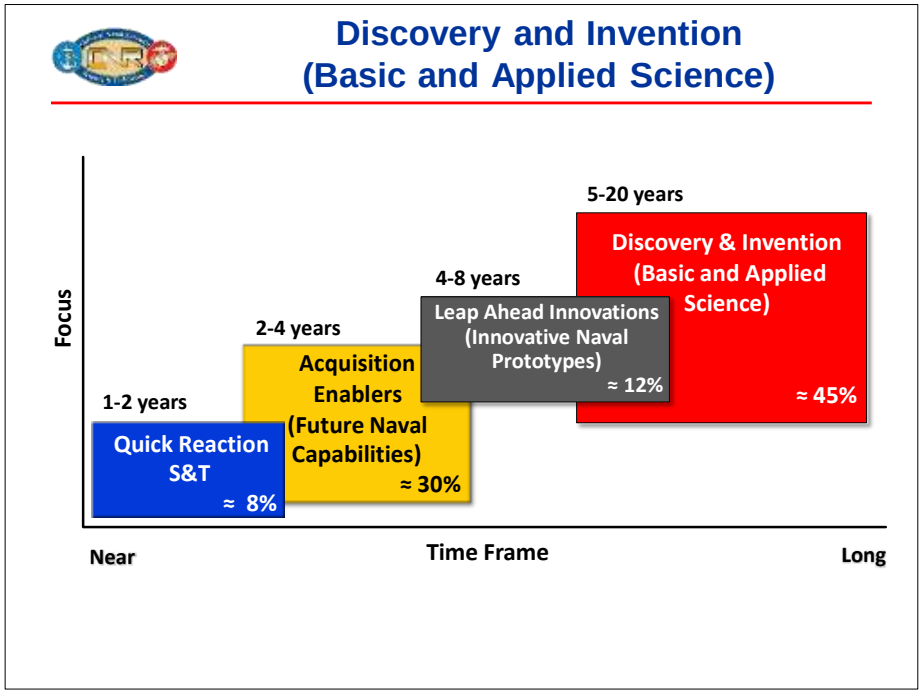
A Hedge Against An Uncertain Future
- **A Broad Based Portfolio of Basic Science**
- **The Foundation for Advanced Technology**
- **Mitigating Against Tech Surprise**
- **Seed Corn for Imposing Our Own Surprises**



The Flip Side of Opportunity……

OPNAV Operates at the Intersection of Fiscal Stress and Strategic Uncertainty

Under These Conditions, “Opportunity” Can Feel More Like…….

…….A Bill……

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Under These Conditions, “Opportunity” Can Feel More Like…….

…..or A Treasure Chest to Be Raided

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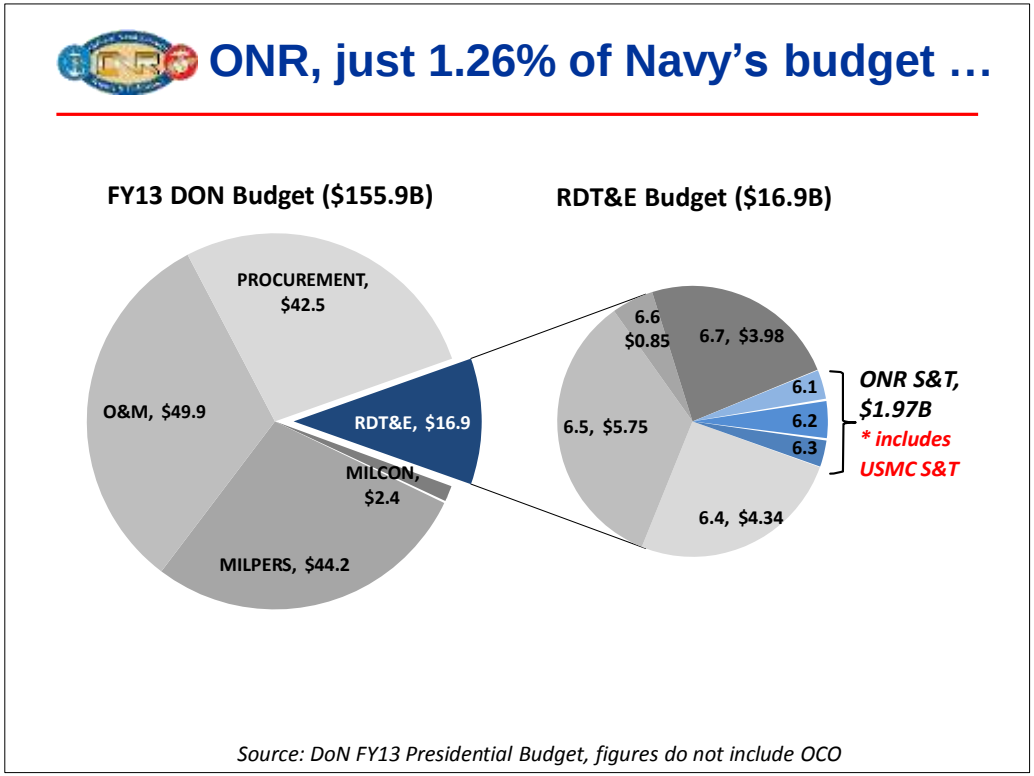
OPNAV Operates at the Intersection of Fiscal Stress and Strategic Uncertainty

Under These Conditions, "Opportunity" Can Feel More Like…….

or…..A Treasure Chest to Be Raided….

….“if only I had that next marginal dollar…then I’d be whole….”



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…….or A Disruption….

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….there’s a reason it’s called Disruptive Innovation……

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Under These Conditions, “Opportunity” Can Feel More Like…….

“…. our POM is in ruins……”

The Flip Side of Opportunity Is Obligation

- What Science and Technology Means to OPNAV: An Obligation
- An Opportunity Without A Matching Obligation is Meaningless
- An Opportunity Without A Matching Obligation Distorts the Opportunity
- **Our First Obligation: Embrace Disruption….Engage In The Process**

…..while our POM build may never go from this to this……

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- An Opportunity Without A Matching Obligation is Meaningless
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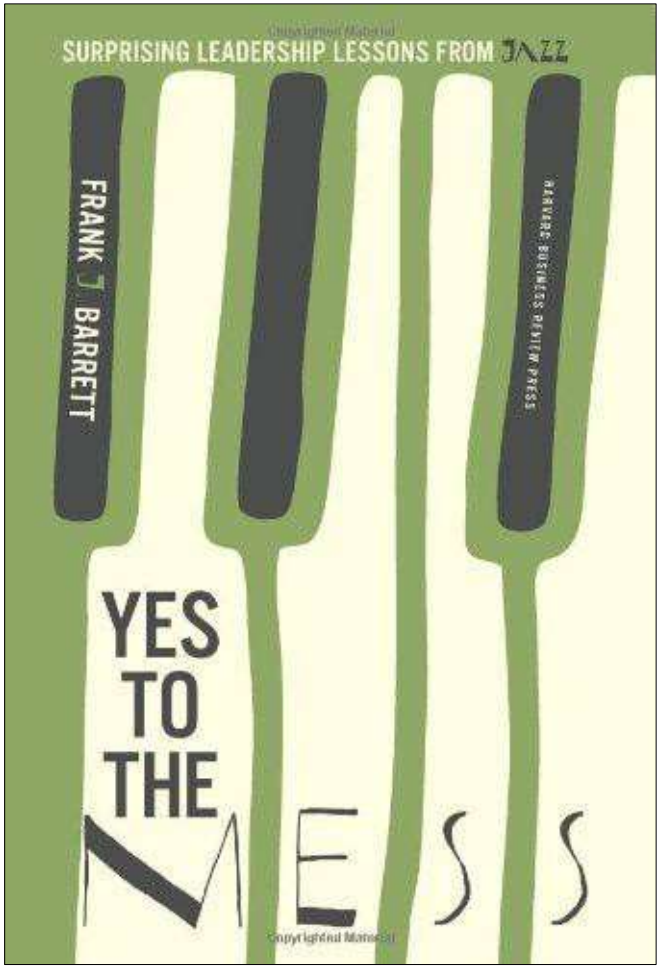
- **Our First Obligation: Embrace Disruption….Engage In The (Messy) Process**

…..we can at least aspire to this……



The Flip Side of Opportunity Is Obligation

- **Our Next Obligation: Examine Our Own Technology Development Practices**
  - CNO is Pressing On Many Fronts: Improve Our Innovation OODA Loop
  - Until Now The Primary Focus Has Been On the S&T Side of that Equation
  - While S&T Can Always Continue To Be Improved……..
  - The Next Great Opportunity for Improvement Lies With Us…….

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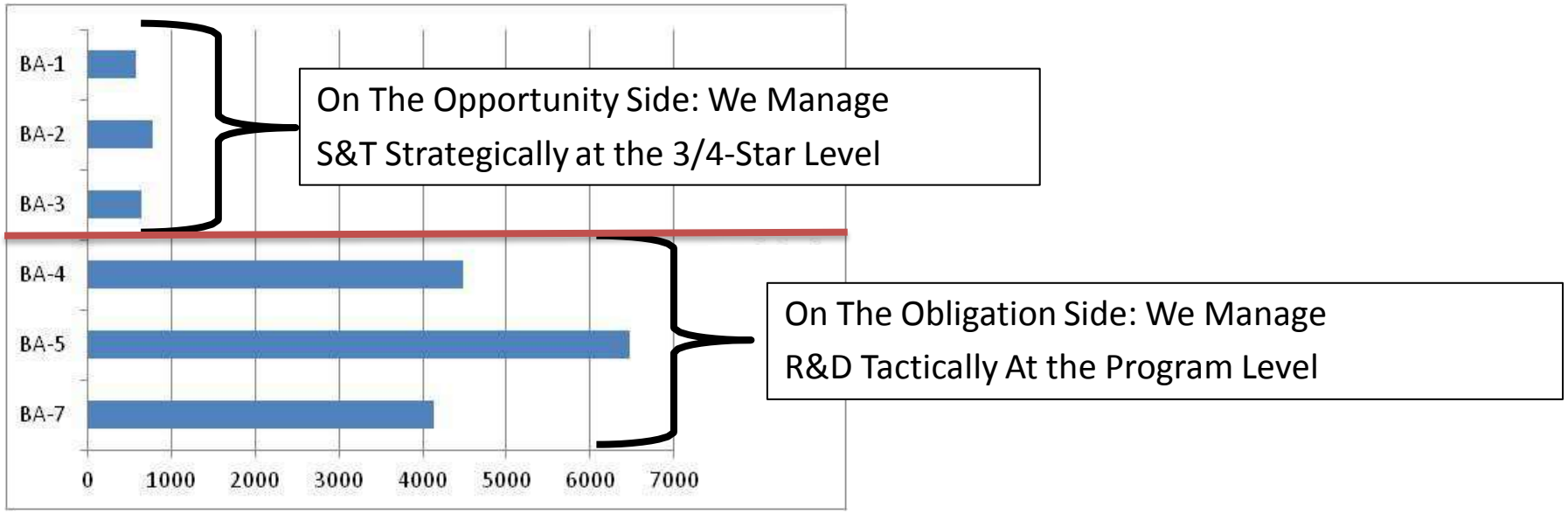
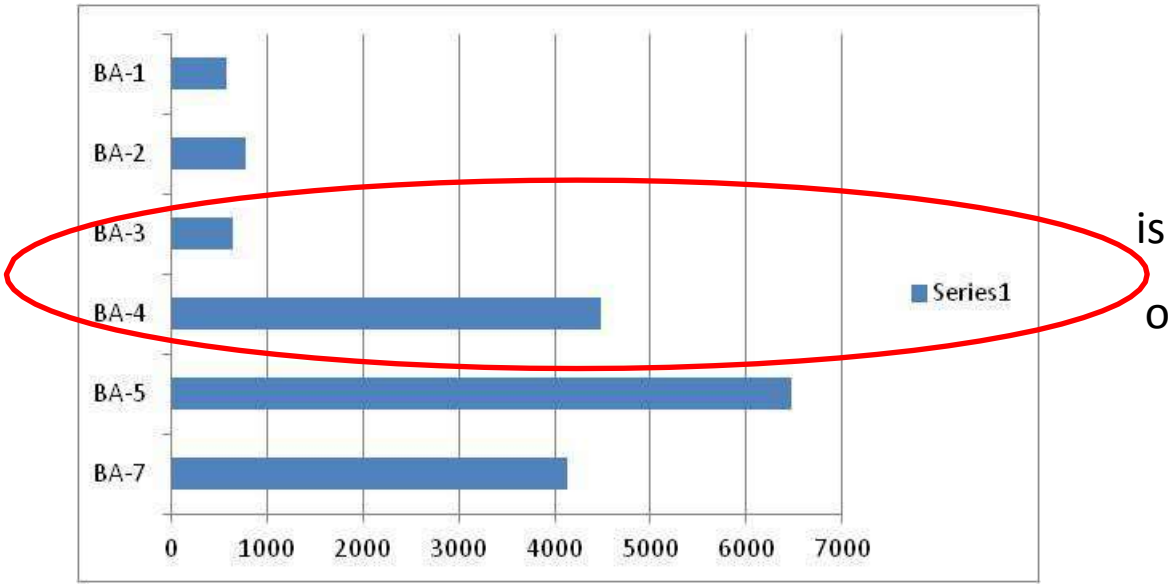
Where We Are Today: To Improve Innovation Focusing On S&T Is Necessary But Insufficient



True or False? The Valley Of Death Is Caused by a Lack of BA-4 Funding

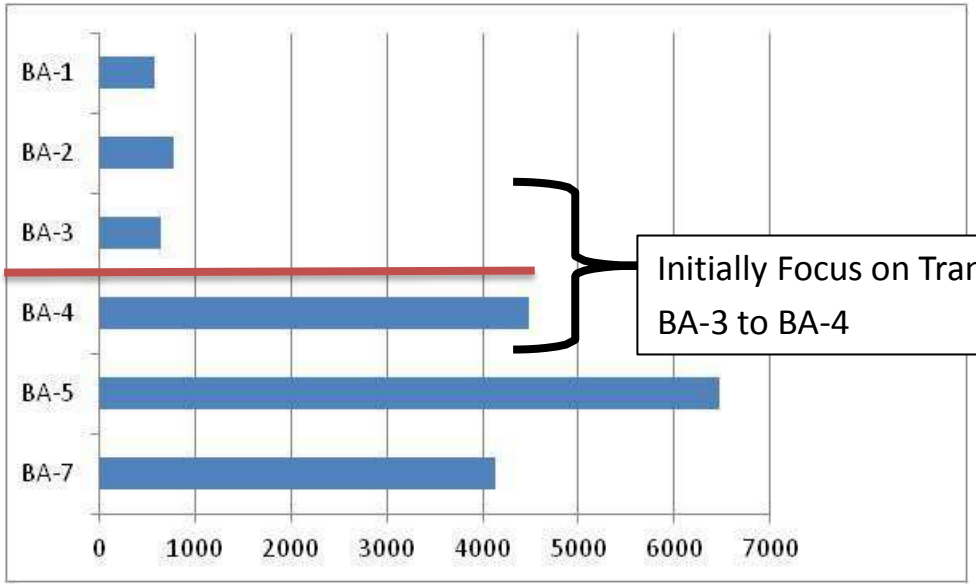


is this a Valley of Death?

or a Darwinian Sea?

is the Valley of Death a fait accompli?
or an artifact of how we manage R&D?

Where We're Headed/Signs of Progress



Initially Focus on Transition
BA-3 to BA-4

RDT&E Corp Board:
A Strategic Approach
BA-1 thru BA-7

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- An Opportunity Without A Matching Obligation is Meaningless
- An Opportunity Without A Matching Obligation Distorts the Opportunity
- **Our Final Obligation: Make Peace With the Non-Linear Nature of S&T**
  - While each of these are now hailed as a success, their individual journeys in real time were full of twists, turns, and unexpected obstacles and opportunities along the way

Every new leap in the Navy's warfighting capabilities started with Navy research:

- **GPS**
- **E2-D radar**
- **Towed array**
- **Aegis**
- **Quiet propulsion**
- **Directed energy …**

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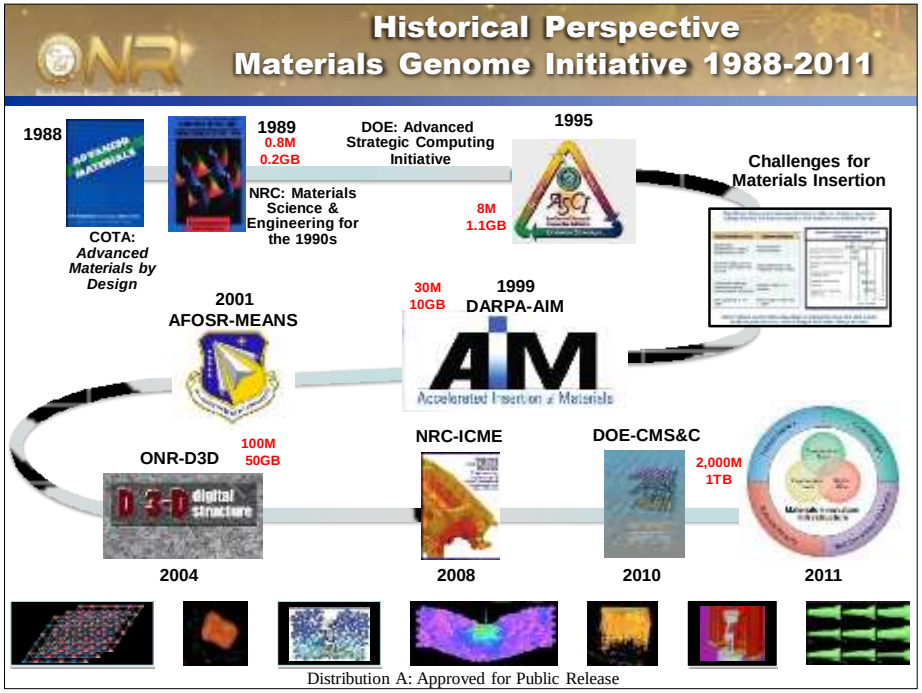

Questions?

Comments?